

CHAPTER 1

INTRODUCTION

1-1. Purpose.

a. General. This manual provides guidance for the safe design and economical construction of retaining and flood walls. This manual is intended primarily for retaining walls which will be subjected to hydraulic loadings such as flowing water, submergence, wave action, and spray, exposure to chemically contaminated atmosphere, and/or severe climatic conditions. For the design of retaining walls which will not be subjected to hydraulic loadings or severe environmental conditions as described above, TM 5-818-1 may be used for computing the loadings and evaluating the stability of the structure.

b. Variations from Guidance. For the evaluation of existing retaining and flood walls which have been loaded up to or above the design loads and show no displacement problems or any other sign of weakening, consideration can be given to reducing the conservatism of the criteria contained in this manual. If variations from the guidance are necessary, justification for the variations should be submitted to HQUSACE to the attention of CECW-E for approval.

1-2. Applicability. This manual applies to all HQUSACE/OCE elements and to all field operating activities having responsibilities for the design of civil works projects.

1-3. References and Bibliography. References and computer program user guides cited in this manual are listed in Appendix A. Additional reference materials pertaining to the subject matter addressed in this manual are included in Appendix B, "Bibliography." Computer program abstract descriptions are shown in Appendix O.

1-4. Terms. Special terms used in this manual are explained in the glossary.

1-5. Scope.

a. Types of Walls. This manual presents design guidance for retaining walls and inland and coastal flood walls. Retaining walls are defined as any wall that restrains material to maintain a difference in elevation. A flood wall is defined as any wall having as its principal function the prevention of flooding of adjacent land. Not specifically covered in this manual are seawalls which are defined as structures separating land and water areas, primarily designed to prevent erosion and other damage due to wave action. They are frequently built at the edge of the water, but can be built inland to withstand periods of high water. Seawalls are generally characterized by a massive cross section and a seaward face shaped to dissipate wave energy. Coastal flood walls, however, are generally located landward of the normal high water line so that they are inundated only by hurricane or other surge tide and have the smooth-faced cantilever stems shown in this manual.

29 Sep 89

b. Types of Foundations. This manual describes procedures for the design of retaining and flood walls on shallow foundations, i.e., bearing directly on rock or soil. The substructure design of pile-founded walls is not included, but is covered in EM 1110-2-2906.

c. Flood Wall Guidance. A flood wall is treated as a special case of a retaining wall. Unless specifically noted, the guidance herein applies to both retaining and flood walls.

d. Geotechnical and Structural Aspects. Both geotechnical and structural aspects of wall design are included. Coordination between geotechnical engineers, structural engineers, and geologists in the design of retaining and flood walls is essential.